



Arizona Department of Transportation

Roadway Engineering Group

MEMORANDUM

To: All Design Personnel
ADOT and Consultants

Date: September 10, 2003

From: John L. Louis
Assistant State Engineer
Roadway Engineering Group

Subject: Superelevation Tables
Roadway Design Guidelines

Superelevation Tables 202.3 A-D contained in Chapter 200 of the Roadway Design Guidelines (RDG) have been revised for your use and are effective immediately. For ongoing projects, the designer should evaluate the values provided and make a comparison with current plan values. Then, based upon all factors affecting the project, a determination can be made whether the change is warranted. Minor changes in values are normally expected and not significant enough to warrant a last minute change of plans. Please consult with your Roadway Design representative if assistance is desired.

The new Superelevation Tables were formulated using the 2001 AASHTO Green Book guidelines. You will see some changes in the presentation of the tables. Please take the time to read the Notes at the bottom of each table as they provide the guidance for usage. Values in the tables may be interpolated when they fall between the table values provided. The development of the new tables was based upon extensive evaluation of the AASHTO guidelines. For persons desiring to obtain further information regarding the formulas utilized or the optional values selected to develop the tables, please contact a Roadway Design Manager.

In conjunction with the Superelevation Tables, updated Superelevation Transition Distribution Details, Figures 202.3A-C are included along with new Shoulder Transition Details to be used when applicable. One change of note in applying superelevation is the adoption of AASHTO Green Book Exhibit 3-30 for the Portion of Runoff Located Prior to a Circular Curve. This table is included in the Superelevation Transition Distribution Figures and will be needed for the preparation of superelevation diagrams in your plans.

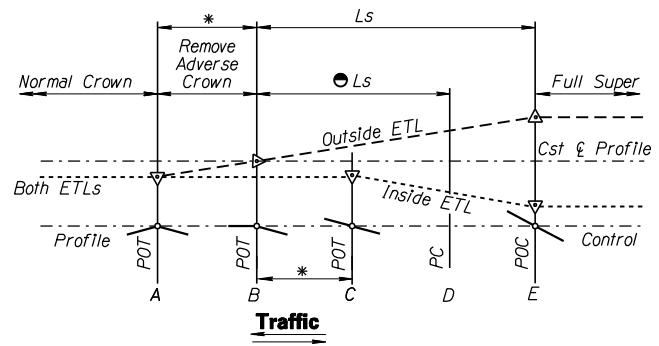
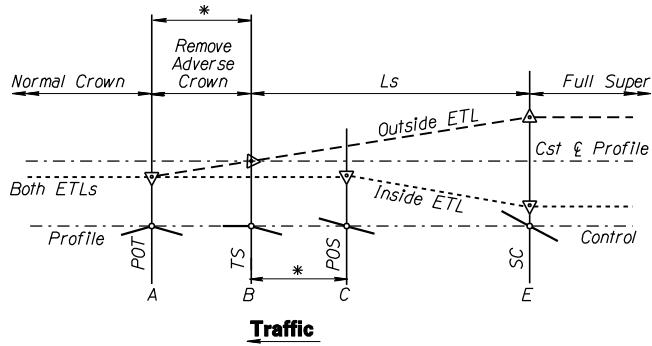
Please contact us with any questions, comments or assistance you may desire on the enclosed materials. The new Tables and Figures will also be available on the Roadway Design website.

Attachments

c: Roadway Engineering Group
Statewide Project Management
Valley Freeway Group
Construction Group
District Engineers (10)

Local Government Section
Regional Traffic Engineers (4)
District Permits (9)
Contracts and Specifications
Materials Group

Traffic Engineering Group
Central Maintenance
FHWA
Engineering Consultant Services
Bridge Group



**2-WAY ROADWAY
AXIS OF ROTATION AT ROADWAY &
RIGHT TURNING ROADWAY**

Values of \bullet for Circular Curves

Design speed (mph)	Portion of runoff located prior to the curve				
	No. of lanes rotated (D)				
	1.0 (12')	1.5 (18')	2.0 (24')	2.5 (30')	3.0 (36')
15-45	0.80	0.85	0.90	0.90	0.90
50-75	0.70	0.75	0.80	0.80	0.85

D = Distance from axis of rotation to outer edge of traveled lane, ft

GENERAL NOTES

Round edge profile intersections with vertical curves having length in feet equal to the design speed in mph.

For main roadway curves without spirals, \bullet s is on tangent and the remainder is on curve.

Shoulders transition with the adjacent travel lane when their normal cross slopes are the same.

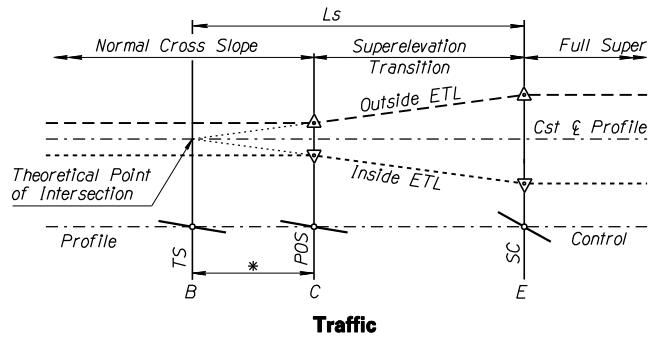
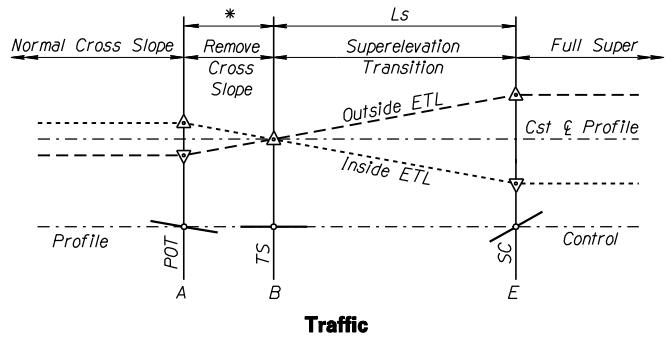
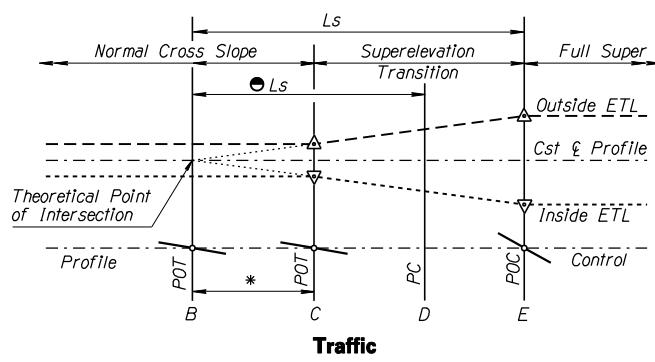
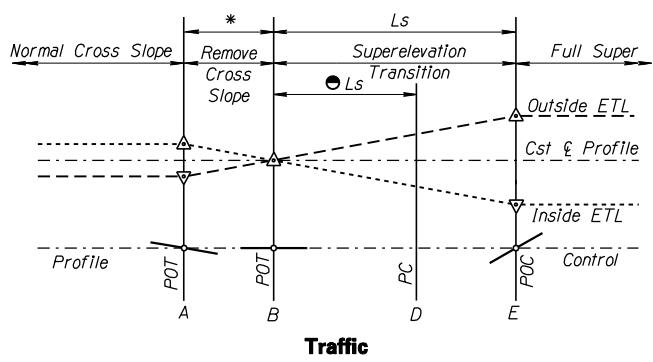
See Figure 202.3C for method of rotating shoulders with adverse cross slope.

LEGEND

- A Point at which adverse crown removal begins
- B Point at which superelevation transition begins
- C Point of equality between superelevation and normal crown
- D PC location for circular curve transition
- E Point at which full superelevation is reached

- ETL Edge of travel lane
- Ls Superelevation runoff length
- * Distance = $(NC/e)Ls$
- \bullet Factor for location of superelevation runoff on circular curves (See Table, above)

**SUPERELEVATION TRANSITION DISTRIBUTION
FIGURE 202.3A**

**Spiral Curve Transition****Spiral Curve Transition****Circular Curve Transition****Circular Curve Transition**

I-WAY ROADWAY
AXIS OF ROTATION AT ROADWAY &
SUPERELEVATION IN DIRECTION OF NORMAL CROSS SLOPE
RIGHT TURNING ROADWAY

I-WAY ROADWAY
AXIS OF ROTATION AT ROADWAY &
SUPERELEVATION OPPOSITE DIRECTION OF NORMAL CROSS SLOPE
LEFT TURNING ROADWAY

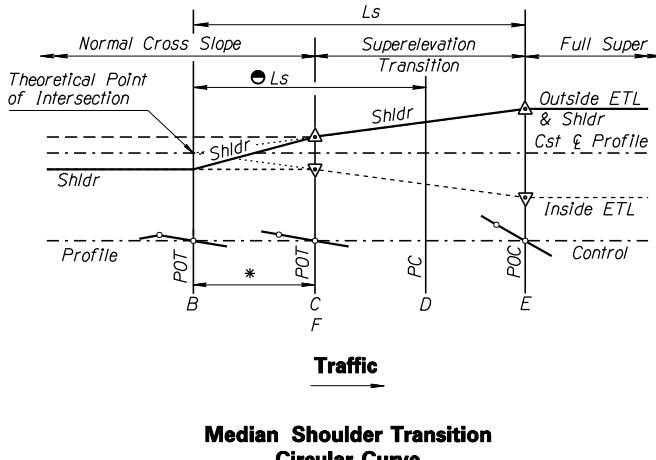
LEGEND

- A Point at which adverse cross slope removal begins
- B Point at which superelevation transition begins
- C Point of equality between superelevation and normal crown
- D PC location for circular curve transition
- E Point at which full superelevation is reached

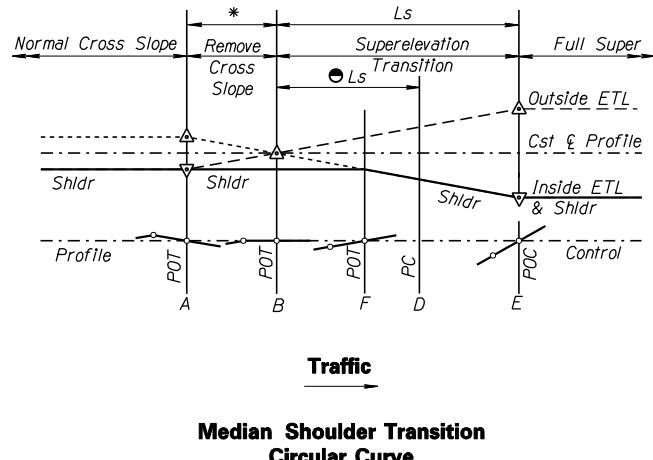
- ETL Edge of travel lane
- Ls Superelevation runoff length
- * Distance = $(NC/e)Ls$
- ⦿ Factor for location of superelevation runoff on circular curves (See Table in Fig. 202.3A)

SUPERELEVATION TRANSITION DISTRIBUTION

FIGURE 202.3B



I-WAY ROADWAY
AXIS OF ROTATION AT ROADWAY &
SUPERELEVATION IN DIRECTION OF NORMAL CROSS SLOPE
RIGHT TURNING ROADWAY
SHOULDER AXIS OF ROTATION AT ADJACENT ETL



I-WAY ROADWAY
AXIS OF ROTATION AT ROADWAY &
SUPERELEVATION OPPOSITE DIRECTION OF NORMAL CROSS SLOPE
LEFT TURNING ROADWAY
SHOULDER AXIS OF ROTATION AT ADJACENT ETL

LEGEND

- A Point at which adverse cross slope removal begins
- B Point at which superelevation transition begins
- C Point of equality between superelevation and normal crown
- D PC location for circular curve transition
- E Point at which full superelevation is reached
- F Point where slope of mainline equals slope of shoulder

- ETL Edge of travel lane
- Ls Superelevation runoff length
- * Distance = $(NC/e)Ls$
- Factor for location of superelevation runoff on circular curves (See Table in Fig. 202.3A)

**SUPERELEVATION TRANSITION DISTRIBUTION
FIGURE 202.3C**

TABLE 202.3A
Superelevation Rates and Transition Lengths for $e_{max} = 0.040$ ft/ft

V = 30 MPH						
Dc	e	Ls FOR VALUES OF D				
		12	18	24	30	36
2° 57'	NC	37	46	55	64	73
3° 00'	0.020	37	47	56	65	74
3° 30'	0.022	41	51	61	71	81
4° 00'	0.024	44	55	65	76	87
5° 00'	0.026	48	60	71	83	95
6° 00'	0.028	51	64	77	89	102
7° 00'	0.030	55	68	82	95	109
8° 00'	0.031	58	72	86	100	115
9° 00'	0.033	60	75	90	105	120
10° 00'	0.034	63	78	94	110	125
11° 00'	0.035	65	81	97	113	130
12° 00'	0.036	67	84	100	117	134
13° 00'	0.037	69	86	103	120	137
14° 00'	0.038	70	88	105	122	140
16° 00'	0.039	72	90	108	126	144
18° 00'	0.040	73	92	110	128	146
19° 06'	0.040	73	92	110	128	146

V = 40 MPH						
Dc	e	Ls FOR VALUES OF D				
		12	18	24	30	36
1° 45'	NC	42	52	62	73	83
2° 00'	0.022	46	57	68	79	91
2° 30'	0.025	51	64	77	89	102
3° 00'	0.027	55	69	83	97	110
3° 30'	0.028	59	74	88	103	118
4° 00'	0.030	63	78	94	109	125
5° 00'	0.033	69	86	103	120	137
6° 00'	0.035	74	92	110	129	147
7° 00'	0.037	78	97	116	136	155
8° 00'	0.039	81	101	121	141	161
9° 00'	0.040	82	103	123	144	164
10° 00'	0.040	83	104	124	145	166
10° 08'	0.040	83	104	124	145	166

V = 45 MPH						
Dc	e	Ls FOR VALUES OF D				
		12	18	24	30	36
1° 24'	NC	45	56	67	78	89
1° 30'	0.021	47	59	70	82	93
2° 00'	0.025	55	69	83	96	110
2° 30'	0.027	61	76	91	106	122
3° 00'	0.030	66	83	99	115	132
3° 30'	0.032	71	88	106	123	141
4° 00'	0.033	75	93	112	130	149
5° 00'	0.036	81	102	122	142	162
6° 00'	0.039	86	107	129	150	172
7° 00'	0.040	89	111	133	155	177
7° 51'	0.040	89	111	134	156	178

V = 50 MPH						
Dc	e	Ls FOR VALUES OF D				
		12	18	24	30	36
1° 09'	NC	48	60	72	84	96
1° 30'	0.024	57	72	86	100	114
2° 00'	0.027	66	82	98	115	131
2° 30'	0.030	73	91	109	127	145
3° 00'	0.033	79	98	118	138	157
3° 30'	0.035	84	105	126	147	167
4° 00'	0.037	88	110	132	154	176
5° 00'	0.039	94	118	141	164	188
6° 00'	0.040	96	120	144	168	192
6° 10'	0.040	96	120	144	168	192

V = 55 MPH						
Dc	e	Ls FOR VALUES OF D				
		12	18	24	30	36
0° 57'	NC	52	64	77	90	103
1° 00'	0.021	53	67	80	93	106
1° 30'	0.026	68	85	101	118	135
2° 00'	0.030	78	97	116	135	155
2° 30'	0.033	86	107	128	150	171
3° 00'	0.036	92	115	138	161	184
3° 30'	0.038	97	121	146	170	194
4° 00'	0.039	101	126	151	176	201
4° 49'	0.040	103	128	154	179	205

V = 60 MPH						
Dc	e	Ls FOR VALUES OF D				
		12	18	24	30	36
0° 48'	NC	54	67	80	94	107
1° 00'	0.023	63	78	94	109	125
1° 30'	0.029	78	97	116	136	155
2° 00'	0.033	89	111	133	156	178
2° 30'	0.036	98	122	146	171	195
3° 00'	0.039	104	129	155	181	207
3° 30'	0.040	107	133	160	186	213
3° 48'	0.040	107	134	160	187	214

LEGEND

Dc = Degree of Curvature
D = Distance from axis of rotation to outer edge of far traveled lane, ft
e = Superelevation in ft/ft
Ls = Superelevation runoff, ft
NC = Maintain 0.020'/ft normal crown

NOTES FOR 0.040 ft/ft SUPERELEVATION

Use for urban arterial highways only. Spirals are not required.
Applicable for all elevations and climatic conditions.
DO NOT use for ramps.
Maximum Dc with 0.020'/ft adverse slope and normal crown is shown as the first entry in each design speed. Ls values are shown for interpolation purposes only.
Maximum Dc for each design speed is shown as the final entry in each table.

TABLE 202.3B
Superelevation Rates and Transition Lengths for $e_{max} = 0.060 \text{ ft/ft}$

V = 30 MPH						
Dc	e	Ls FOR VALUES OF D				
		12	18	24	30	36
2° 31'	NC	37	46	55	64	73
3° 00'	0.023	43	53	64	74	85
3° 30'	0.026	48	60	72	84	96
4° 00'	0.029	53	67	80	93	106
5° 00'	0.034	62	78	93	108	124
6° 00'	0.038	69	86	104	121	138
7° 00'	0.041	75	93	112	130	149
8° 00'	0.043	80	99	119	139	159
9° 00'	0.046	84	105	126	147	168
10° 00'	0.048	88	110	132	154	176
11° 00'	0.050	92	115	138	161	184
12° 00'	0.052	95	119	143	167	190
13° 00'	0.054	99	123	148	172	197
14° 00'	0.055	104	130	156	182	208
16° 00'	0.058	119	149	179	208	238
18° 00'	0.059	134	167	201	234	268
20° 00'	0.060	149	186	223	260	297
20° 50'	0.060	148	185	222	259	296

V = 40 MPH						
Dc	e	Ls FOR VALUES OF D				
		12	18	24	30	36
1° 30'	NC	42	52	62	73	83
2° 00'	0.025	53	66	79	92	105
2° 30'	0.030	63	78	94	109	125
3° 00'	0.034	71	89	107	124	142
3° 30'	0.038	79	98	118	137	157
4° 00'	0.041	85	106	127	148	169
5° 00'	0.046	95	119	142	166	189
6° 00'	0.050	104	129	155	181	207
7° 00'	0.053	111	138	166	194	221
8° 00'	0.056	141	176	212	247	282
9° 00'	0.058	159	198	238	278	317
10° 00'	0.059	176	220	264	308	352
11° 00'	0.060	194	242	291	339	388
11° 14'	0.060	198	248	297	346	396

V = 45 MPH						
Dc	e	Ls FOR VALUES OF D				
		12	18	24	30	36
1° 13'	NC	45	56	67	78	89
1° 30'	0.024	54	67	80	93	107
2° 00'	0.030	67	84	101	117	134
2° 30'	0.035	79	98	118	138	157
3° 00'	0.040	88	110	132	154	176
3° 30'	0.043	96	120	144	168	192
4° 00'	0.046	103	129	154	180	206
5° 00'	0.051	115	143	172	201	229
6° 00'	0.056	151	188	226	264	301
7° 00'	0.058	176	220	264	307	351
8° 00'	0.060	201	251	301	351	401
8° 41'	0.060	218	272	327	381	435

V = 50 MPH						
Dc	e	Ls FOR VALUES OF D				
		12	18	24	30	36
1° 00'	NC	48	60	72	84	96
1° 30'	0.028	68	85	102	118	135
2° 00'	0.035	84	105	126	147	168
2° 30'	0.040	97	121	145	170	194
3° 00'	0.045	107	134	161	188	214
3° 30'	0.048	116	145	174	203	232
4° 00'	0.052	124	155	186	217	248
5° 00'	0.056	172	215	258	301	344
6° 00'	0.059	207	258	310	361	413
6° 52'	0.060	236	295	354	413	472

V = 55 MPH						
Dc	e	Ls FOR VALUES OF D				
		12	18	24	30	36
0° 50'	NC	52	64	77	90	103
1° 00'	0.023	60	75	90	105	120
1° 30'	0.032	83	104	125	146	166
2° 00'	0.040	102	127	153	178	204
2° 30'	0.045	116	145	174	203	232
3° 00'	0.050	128	160	192	224	256
3° 30'	0.054	138	172	207	241	275
4° 00'	0.057	183	229	275	321	366
5° 00'	0.060	229	286	344	401	458
5° 23'	0.060	247	308	370	431	493

V = 60 MPH						
Dc	e	Ls FOR VALUES OF D				
		12	18	24	30	36
0° 42'	NC	54	67	80	94	107
0° 45'	0.021	57	71	85	99	113
1° 00'	0.027	72	90	108	126	144
1° 30'	0.037	99	124	148	173	198
2° 00'	0.045	120	149	179	209	239
2° 30'	0.051	136	169	203	237	271
3° 00'	0.055	148	184	221	258	295
3° 30'	0.058	208	260	312	364	416
4° 00'	0.060	238	297	357	416	476
4° 17'	0.060	254	318	381	445	508

V = 65 MPH						
Dc	e	Ls FOR VALUES OF D				
		12	18	24	30	36
0° 37'	NC	56	70	84	98	112
0° 45'	0.024	66	83	99	116	132
1° 00'	0.030	85	106	127	148	169
1° 30'	0.041	116	144	173	202	231
2° 00'	0.050	139	174	209	243	278
2° 30'	0.056	156	195	234	272	311
3° 00'	0.059	227	284	340	397	453
3° 27'	0.060	261	326	391	456	522

LEGEND

Dc = Degree of Curvature
D = Distance from axis of rotation to outer edge of far traveled lane, ft
e = Superelevation in ft/ft
Ls = Superelevation runoff, ft
NC = Maintain 0.020'/ft normal crown

NOTES FOR 0.060 ft/ft SUPERELEVATION

Use for urban controlled access highways including ramps. Spirals are optional on urban highways.
Applicable for all rural highways at elevations over 6000 ft and for definite snow or ice conditions.
For rural highways, use spirals below heavy line, circular curves above.
Maximum Dc with 0.020'/ft adverse slope and normal crown is shown as the first entry in each design speed. Ls values are shown for interpolation purposes only.
Maximum Dc for each design speed is shown as the final entry in each table.

TABLE 202.3C
Superelevation Rates and Transition Lengths for $e_{max} = 0.080$ ft/ft

		V = 30 MPH				
Dc	e	Ls FOR VALUES OF D				
		12	18	24	30	36
2° 23'	NC	37	46	55	64	73
2° 30'	0.021	39	48	58	67	77
3° 00'	0.025	45	57	68	79	90
3° 30'	0.028	52	65	77	90	103
4° 00'	0.031	58	72	87	101	115
5° 00'	0.038	69	87	104	121	138
6° 00'	0.043	80	99	119	139	159
7° 00'	0.048	89	111	133	155	177
8° 00'	0.053	96	120	144	168	192
9° 00'	0.056	103	129	154	180	206
10° 00'	0.060	109	136	163	191	218
11° 00'	0.063	115	143	172	200	229
12° 00'	0.065	120	150	180	209	239
13° 00'	0.068	125	156	187	218	249
14° 00'	0.070	129	161	193	225	257
16° 00'	0.074	136	170	204	237	271
18° 00'	0.077	141	176	212	247	282
20° 00'	0.079	149	186	223	260	297
22° 00'	0.080	144	180	216	252	288
22° 55'	0.080	141	176	212	247	282

		V = 40 MPH				
Dc	e	Ls FOR VALUES OF D				
		12	18	24	30	36
1° 26'	NC	42	52	62	73	83
1° 30'	0.021	44	54	65	76	87
2° 00'	0.027	56	70	84	98	112
2° 30'	0.033	68	85	102	119	136
3° 00'	0.038	79	99	118	138	158
3° 30'	0.043	89	111	134	156	178
4° 00'	0.048	99	123	148	172	197
5° 00'	0.055	115	143	172	200	229
6° 00'	0.062	128	160	191	223	255
7° 00'	0.067	139	173	208	243	277
8° 00'	0.071	148	185	222	259	295
9° 00'	0.075	159	198	238	278	317
10° 00'	0.078	176	220	264	308	352
11° 00'	0.079	194	242	291	339	388
12° 00'	0.080	195	244	292	341	389
12° 19'	0.080	192	240	288	336	384

		V = 45 MPH				
Dc	e	Ls FOR VALUES OF D				
		12	18	24	30	36
1° 09'	NC	45	56	67	78	89
1° 30'	0.025	57	71	85	99	113
2° 00'	0.033	73	91	109	127	145
2° 30'	0.039	88	109	131	153	175
3° 00'	0.045	101	126	151	176	202
3° 30'	0.051	113	141	169	198	226
4° 00'	0.056	124	155	186	216	247
5° 00'	0.064	142	177	213	248	283
6° 00'	0.070	156	195	234	273	312
7° 00'	0.075	176	220	264	307	351
8° 00'	0.078	201	251	301	351	401
9° 00'	0.080	225	281	337	393	450
9° 33'	0.080	218	273	327	382	436

		V = 50 MPH				
Dc	e	Ls FOR VALUES OF D				
		12	18	24	30	36
0° 57'	NC	48	60	72	84	96
1° 00'	0.021	51	63	76	88	101
1° 30'	0.030	73	91	109	127	145
2° 00'	0.038	93	116	139	162	185
2° 30'	0.046	111	138	166	194	221
3° 00'	0.053	127	158	190	222	253
3° 30'	0.058	141	176	211	246	281
4° 00'	0.063	153	191	229	267	305
5° 00'	0.072	172	215	258	301	344
6° 00'	0.077	207	258	310	361	413
7° 00'	0.080	241	301	361	421	482
7° 32'	0.080	246	307	369	430	491

		V = 55 MPH				
Dc	e	Ls FOR VALUES OF D				
		12	18	24	30	36
0° 48'	NC	52	64	77	90	103
1° 00'	0.025	64	79	95	111	127
1° 30'	0.035	91	113	136	158	181
2° 00'	0.045	115	144	172	201	230
2° 30'	0.053	136	170	204	238	272
3° 00'	0.060	155	194	232	271	309
3° 30'	0.067	171	213	256	298	341
4° 00'	0.071	183	229	275	321	366
5° 00'	0.078	229	286	344	401	458
5° 56'	0.080	272	340	408	476	544

		V = 60 MPH				
Dc	e	Ls FOR VALUES OF D				
		12	18	24	30	36
0° 40'	NC	54	67	80	94	107
0° 45'	0.022	59	74	89	103	118
1° 00'	0.029	77	96	115	134	153
1° 30'	0.041	109	137	164	191	218
2° 00'	0.052	138	172	207	241	275
2° 30'	0.061	162	203	243	284	324
3° 00'	0.068	183	228	274	319	365
3° 30'	0.074	208	260	312	364	416
4° 00'	0.078	238	297	357	416	476
4° 45'	0.080	283	353	424	495	565

		V = 65 MPH				
Dc	e	Ls FOR VALUES OF D				
		12	18	24	30	36
0° 36'	NC	56	70	84	98	112
0° 45'	0.025	70	87	104	121	139
1° 00'	0.032	90	113	135	158	180
1° 30'	0.046	129	161	193	225	257
2° 00'	0.058	162	203	243	284	324
2° 30'	0.068	191	239	286	334	381
3° 00'	0.075	227	284	340	397	453
3° 30'	0.079	265	331	397	463	529
3° 51'	0.080	292	365	437	510	583

		V = 70 MPH				
Dc	e	Ls FOR VALUES OF D				
		12	18	24	30	36
0° 32'	NC	60	75	90	105	120
0° 45'	0.028	83	104	125	145	166
1° 00'	0.036	108	135	162	189	216
1° 30'	0.051	154	193	231	270	308
2° 00'	0.065	196	244	293	342	391
2° 30'	0.075	236	295	354	413	472
3° 00'	0.080	283	354	425	496	566
3° 09'	0.080	297	372	446	520	594

LEGEND

- Dc = Degree of Curvature
- D = Distance from axis of rotation to outer edge of far traveled lane, ft
- e = Superelevation in ft/ft
- Ls = Superelevation runoff, ft
- NC = Maintain 0.020/ft normal crown

NOTES FOR 0.080 ft/ft SUPERELEVATION

- Use for rural highways only
- Applicable for elevations over 4000 ft to 6000 ft and for possible snow or ice conditions.
- For rural highways, use spirals below heavy line, circular curves above.
- Maximum Dc with 0.020/ft adverse slope and normal crown is shown as the first entry in each design speed. Ls values are shown for interpolation purposes only.
- Maximum Dc for each design speed is shown as the final entry in each table.

TABLE 202.3D
Superelevation Rates and Transition Lengths for $e_{max} = 0.100 \text{ ft/ft}$

V = 30 MPH						
Dc	e	Ls FOR VALUES OF D				
		12	18	24	30	36
2° 19'	NC	37	46	55	64	73
2° 30'	0.021	40	49	59	69	79
3° 00'	0.025	47	58	70	82	93
3° 30'	0.029	54	67	80	94	107
4° 00'	0.033	61	76	91	106	121
5° 00'	0.040	73	92	110	128	146
6° 00'	0.047	85	107	128	149	170
7° 00'	0.053	97	121	145	169	193
8° 00'	0.058	107	133	160	187	213
9° 00'	0.064	116	145	174	203	232
10° 00'	0.068	125	156	187	218	249
11° 00'	0.072	133	166	199	232	265
12° 00'	0.076	140	175	209	244	279
13° 00'	0.080	146	183	219	256	292
14° 00'	0.083	152	190	228	266	304
16° 00'	0.089	163	203	244	284	325
18° 00'	0.093	159	199	239	278	318
20° 00'	0.097	151	189	226	264	302
22° 00'	0.099	144	180	216	252	288
24° 00'	0.100	138	172	207	241	276
24° 55'	0.100	135	169	203	237	270

V = 40 MPH						
Dc	e	Ls FOR VALUES OF D				
		12	18	24	30	36
1° 24'	NC	42	52	62	73	83
1° 30'	0.021	45	56	67	78	89
2° 00'	0.028	58	73	87	102	116
2° 30'	0.034	71	89	107	124	142
3° 00'	0.040	84	104	125	146	167
3° 30'	0.046	95	119	143	166	190
4° 00'	0.051	106	133	159	186	212
5° 00'	0.061	127	159	190	222	253
6° 00'	0.070	145	181	217	253	289
7° 00'	0.078	161	201	241	281	321
8° 00'	0.084	174	217	261	304	348
9° 00'	0.089	185	231	278	324	370
10° 00'	0.094	194	242	291	339	387
11° 00'	0.097	201	251	301	351	401
12° 00'	0.099	195	244	292	341	389
13° 00'	0.100	187	234	281	327	374
13° 19'	0.100	185	231	277	323	370

V = 45 MPH						
Dc	e	Ls FOR VALUES OF D				
		12	18	24	30	36
1° 08'	NC	45	56	67	78	89
1° 30'	0.026	59	73	88	102	117
2° 00'	0.034	76	95	114	133	152
2° 30'	0.041	93	116	139	162	185
3° 00'	0.049	108	135	162	189	216
3° 30'	0.055	123	153	184	215	245
4° 00'	0.061	137	171	205	239	273
5° 00'	0.072	161	201	242	282	322
6° 00'	0.082	182	227	273	318	363
7° 00'	0.089	198	248	297	347	396
8° 00'	0.095	211	263	316	368	421
9° 00'	0.098	225	281	337	393	450
10° 00'	0.100	214	267	320	373	427
10° 19'	0.100	210	263	315	367	420

V = 50 MPH						
Dc	e	Ls FOR VALUES OF D				
		12	18	24	30	36
0° 56'	NC	48	60	72	84	96
1° 00'	0.021	52	65	78	91	103
1° 30'	0.031	76	94	113	132	151
2° 00'	0.041	98	122	146	171	195
2° 30'	0.049	119	148	178	207	237
3° 00'	0.057	138	172	207	241	275
3° 30'	0.065	156	195	234	272	311
4° 00'	0.072	172	215	258	301	344
5° 00'	0.083	201	251	301	351	401
6° 00'	0.092	222	277	332	388	443
7° 00'	0.098	241	301	361	421	482
8° 00'	0.100	239	298	358	417	477
8° 15'	0.100	235	294	352	411	470

V = 55 MPH						
Dc	e	Ls FOR VALUES OF D				
		12	18	24	30	36
0° 47'	NC	52	64	77	90	103
1° 00'	0.025	65	82	98	114	130
1° 30'	0.037	95	118	142	166	189
2° 00'	0.048	122	153	183	214	244
2° 30'	0.058	148	185	221	258	295
3° 00'	0.067	171	214	257	299	342
3° 30'	0.075	193	241	289	337	385
4° 00'	0.083	212	265	318	371	424
5° 00'	0.094	240	300	360	420	480
6° 00'	0.099	275	344	412	481	549
6° 31'	0.100	264	330	396	462	528

V = 60 MPH						
Dc	e	Ls FOR VALUES OF D				
		12	18	24	30	36
0° 40'	NC	54	67	80	94	107
0° 45'	0.023	61	76	91	106	121
1° 00'	0.030	79	99	119	139	158
1° 30'	0.043	115	144	172	201	230
2° 00'	0.055	148	185	222	259	295
2° 30'	0.067	178	223	267	312	356
3° 00'	0.077	206	257	309	360	411
3° 30'	0.086	230	288	345	402	460
4° 00'	0.093	248	310	372	434	496
5° 00'	0.100	297	372	446	520	594
5° 14'	0.100	295	369	442	516	589

V = 65 MPH						
Dc	e	Ls FOR VALUES OF D				
		12	18	24	30	36
0° 35'	NC	56	70	84	98	112
0° 45'	0.025	71	89	107	125	142
1° 00'	0.033	94	117	140	163	187
1° 30'	0.048	136	169	203	237	271
2° 00'	0.062	175	218	262	306	349
2° 30'	0.075	211	264	316	369	422
3° 00'	0.087	244	305	366	427	487
3° 30'	0.095	267	334	400	467	534
4° 00'	0.099	302	378	453	529	604
4° 16'	0.100	322	402	483	563	644

V = 70 MPH						
Dc	e	Ls FOR VALUES OF D				
		12	18	24	30	36
0° 31'	NC	60	75	90	105	120
0° 45'	0.028	85	107	128	149	170
1° 00'	0.037	112	140	168	196	224
1° 30'	0.054	163	204	245	285	326
2° 00'	0.070	211	264	317	369	422
2° 30'	0.085	256	320	384	448	512
3° 00'	0.096	290	362	434	506	579
3° 30'	0.100	330	412	495	577	659

LEGEND

Dc = Degree of Curvature

D = Distance from axis of rotation to outer edge of far traveled lane, ft

e = Superelevation in ft/ft

Ls = Superelevation runoff, ft

NC = Maintain 0.020'/ft normal crown